

I claim:

1.

1 In a fragmenting rotor assembly for waste wood and
2 other fragmentable material:

3 a. a drive shaft and mechanism for driving said
4 shaft in a direction of rotation, said drive shaft
5 incorporating axially spaced radially projecting rotors
6 along its axis;

7 b. a series of radially projecting side for side
8 reversible hammer mounting hammer supports selectively
9 situated along the axis of said shaft on said rotors and
10 powered by said shaft, the hammer supports having radially
11 outward heads with a rotatively leading face portion and a
12 parallel trailing face portion adapted to selectively mount
13 said hammers radially outward of said rotors;

14 c. said hammers comprising fragmenting knives
15 removably secured to the rotatively leading portions of said
16 hammer supports;

17 d. said knives having axially extending reducing
18 edges; and

19 e. said hammer supports being mounted at the
20 sides of said rotors to partly overlie said rotors axially
21 to define axially abutting adequate radial support for paths
22 of knife travel.

2.

1 The assembly of claim 1 wherein pairs of said

2 hammer supports at angular intervals are mounted on opposite
3 sides of said rotors, the hammer supports being changeably
4 mounted on the rotors so that the trailing face of said
5 hammer head on one hammer support may become the leading
6 face of a hammer head mounted on the opposite side of said
7 rotor when its leading face is worn and the hammer support
8 is turned over and mounted on the opposite side of a rotor.

3.

1 The assembly of claim 1 wherein changeable
2 deflector members are situated axially between said hammer
3 heads and adjacent rotors, said deflector members being in
4 radial alignment with said hammer heads on adjacent rotors.

4.

1 The assembly of claim 1 wherein said hammer
2 supports mount on rods extending axially parallel to said
3 shaft through said rotors at equi-spaced circumferential
4 intervals and said hammer supports on each rotor are
5 oppositely disposed pairs provided at 180° intervals, said
6 pairs of hammer supports on adjacent rotors being provided
7 in axially staggered relation.

5.

1 The assembly of claim 4 wherein said pairs of
2 hammer supports are in 45° offset relation.

6.

1 The assembly of claim 4 wherein each hammer
2 support has a trailing portion extending radially alongside
3 one side of a rotor which mounts on a pair of said rods, and
4 an inset shouldered head portion with a radially inner
5 curvilinear surface nesting on said rotor periphery and
6 extending radially outwardly therefrom partly in radial
7 alignment with said rotor.

7.

1 The assembly of claim 6 wherein said deflectors
2 are chain link configured and each has openings removably
3 received on a pair of said rods.

8.

1 The assembly of claim 3 wherein said deflectors
2 comprise elongate members which include mid-portions with
3 curvilinear exterior surfaces and radially inner conforming
4 surfaces nesting with said shaft; said deflector mid-portion
5 having end portions with radially outer deflector surfaces
6 and having openings receiving said rods.

9.

1 In a fragmenting rotor assembly operable with
2 anvil surface for comminuting waste wood and other
3 fragmentable material:
4 a. a drive shaft and mechanism for driving said

5 shaft in a direction of rotation, said drive shaft
6 incorporating axially spaced discs along its axis;

7 b. a series of side for side reversible radially
8 projecting knife supports situated along the axis of said
9 shaft on said discs and powered by said shaft, the knife
10 supports having radially outward heads with a generally
11 radial leading face portion and a substantially paralled
12 trailing face portion;

13 c. fragmenting knives removably secured to said
14 leading face portions of said knife supports;

15 d. said knives having axially extending reducing
16 edges and said leading and trailing faces having fastening
17 elements for mounting said knives selectively on said face
18 portions; and

19 e. said knife supports being mounted at the
20 sides of each disc with the discs being so spaced that said
21 knives on the confronting sides of adjacent discs have
22 axially overlapping paths of travel.

10.

1 The assembly of claim 9 wherein deflector members
2 are provided in radial alignment with said knife supports
3 circumferentially between them.

11.

1 The assembly of claim 10 wherein a series of
2 circumferentially spaced axially extending rods are provided
3 to extend between said discs, and said knife supports and

4 said deflector members are rigidly releasably mounted on
5 said rods in radially alternating relation.

12.

1 The rotor assembly of claim 11 wherein end plate
2 assemblies are provided at each end of said rotor assembly
3 and include end plates with cavities for receiving
4 circumferentially adjustable locking plates, the end plates
5 and locking plates both having rod receiving openings which
6 can be aligned in a rod removing position and which receive
7 said rods.

13.

1 In a method of making a fragmenting rotor assembly
2 operable with anvil surface for comminuting waste wood and
3 other fragmentable material:

4 a. providing a drive shaft and mechanism for
5 driving said shaft in a direction of rotation;

6 b. providing a series of radially projecting
7 side for side reversible hammer supports with radially outer
8 heads situated along the axis of said shaft and powered by
9 said shaft, the hammer heads having a leading portion and a
10 trailing portion;

11 c. providing fragmenting knives with axially
12 extending reducing edges removably secured to the rotatively
13 leading portions of said hammer heads; and

14 d. mounting separately replaceable deflecting
15 members independently of said hammer heads and radially

16 between each pair of hammers which have outer ends moving in
17 a circumferential path of lesser radial extent than the
18 circumferential path of said knife edges.

14.

1 The method of claim 13 comprising providing said
2 deflecting members as generally oblong bodies with a central
3 portion and with lobular outer ends, and providing said
4 hammers and deflecting members in helically staggered
5 relation along the axis of said shaft with each deflecting
6 member lobular end in radial plane alignment with a hammer
7 knife.

15.

1 The method of claim 13 comprising mounting said
2 hammer heads angularly at the sides of each disc so that the
3 knives thereon are of such axial extent that their paths of
4 annular travel axially overlap without interfering.

16.

1 The method of claim 13 wherein the knives of
2 hammer heads secured to the opposite sides of the same disc
3 are secured in circumferentially displaced position and have
4 a rotary path of axial overlap.

17.

1 The method of claim 13 comprising mounting said

2 deflecting members in substantially axial alignment with
3 said hammer supports and reversing said hammer supports side
4 for side when they become worn.

18.

1 The method of claim 17 comprising mounting a
2 series of circumferentially spaced axially extending pairs
3 of rods to extend between said discs, and mounting said
4 hammer heads and deflecting members releasably on said rods
5 to extend between said pairs of rods in radially alternating
6 relation.

19.

1 In a fragmenting rotor assembly operable with an
2 anvil mechanism for fragmenting waste wood and other
3 fragmentable material:

4 a. a drive shaft assembly including a mechanism
5 for driving said shaft assembly in a direction of rotation
6 about an axis of rotation, said drive shaft assembly
7 incorporating axially spaced radially projecting rotors
8 along its axis;

9 b. a series of side for side reversible radially
10 projecting hammer supports powered by said shaft assembly
11 situated along the axis of said shaft assembly and
12 positioned to lie sidewise contiguously to said rotors
13 along said axis, the hammer supports extending radially
14 outward of said rotors and having heads with a rotatively
15 leading face portion and a trailing face portion;

16 c. hammers comprising fragmenting knives
17 removably secured to said leading portions of said hammer
18 supports;

19 d. said knives having axially extending reducing
20 edges; and

21 e. one of said contiguous hammer supports and
22 rotors being sidewise shoulder and providing shoulder
23 receiving surface to be partly sidewise received by
24 shoulder received surface provided on the other.

20.

1 The assembly of claim 19 wherein said sidewise
2 shouldered configuration and shoulder receiving surface are
3 complementally curvilinear on generally a radius extending
4 from said axis.

21.

1 The assembly of claim 19 in which said hammer
2 supports on opposite sides of said rotors are sidewise
3 shouldered to partly overlie said rotors from the opposite
4 axial direction and thereby protect them.

22.

1 The assembly of claim 19 in which said drive shaft
2 assembly includes a plurality of circumferentially spaced
3 rods extending axially parallelly, and said hammer supports
4 are non-rotatably received thereon, and deflector members

5 circumferentially between said hammer supports and in
6 substantial radial alignment with them mounted non-rotatably
7 on said rods.

23.

1 The rotor assembly of claim 19 wherein said knife
2 edges have partly axially overlapping paths of travel and
3 are axially helically positioned along said drive shaft
4 assembly.

24.

1 The rotor assembly of claim 19 wherein said rotors
2 incorporate pairs of rotors and an axially contiguous pair
3 of hammer supports with radially aligned axial deflectors
4 and having side by side paths generally fill the space
5 between said pairs of said rotors.

25.

1 The rotor assembly of claim 19 in which said knife
2 edges having partly overlapping paths of travel are
3 sidewisely associated with opposite sides of the same rotor
4 element.

26.

1 In a fragmenting rotor assembly, operable with
2 anvil surface for fragmenting waste wood and other
3 fragmentable material:

4 a. a drive shaft and mechanism for driving said
5 shaft in a direction of rotation about an axis, said drive
6 shaft incorporating axially spaced radially projecting
7 rotors along its axis;

8 b. a series of radially projecting side for side
9 reversible hammer legs situated along the axis of said shaft
10 on said rotors and powered by said shaft, the hammer legs
11 having heads with a rotatively leading face portion and a
12 generally parallel trailing face portion radially outward of
13 said rotors and with knife securing elements on each face
14 portion;

15 c. fragmenting knives having axially extending
16 reducing edges removably secured to the leading portions of
17 said hammer heads;

18 d. said hammer legs being mounted at the sides
19 of said rotors to partly overlie said rotors axially and
20 radially conformed to said rotors; and

21 e. deflector members situated axially between
22 said hammer legs and adjacent rotors, said deflector members
23 being in substantial radial alignment with said hammer legs
24 on adjacent rotors.